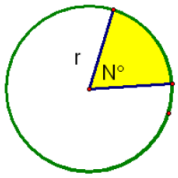
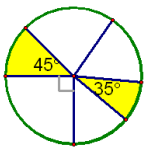
11-5 Geometric Probability




Area of Sector

$$A = \frac{N}{360}\pi r^2$$




Find the area of each sector.

d = 18 in

$A = \frac{45}{360}\,81\pi =$

$\frac{1}{8}81\pi = \frac{81\pi}{8} \approx 31.8\ in^2$

$A = \frac{35}{360}\,81\pi = \approx 24.7\ in^2$

Find the area of the segment.

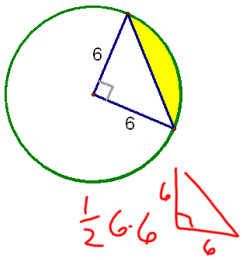
$(A_{sector} - A_{\Delta})$

$\frac{90}{360}36\pi - \frac{1}{2}6\cdot6$

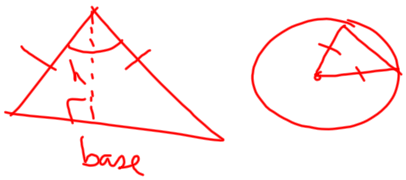
$\frac{1}{4}36\pi$

$9\pi - 18$

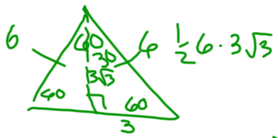
$\approx 10.3\ in^2$




$\frac{1}{2}6\cdot6$




Find the area of the shaded region.

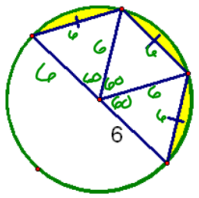



$\frac{1}{2} 6 \cdot 3\sqrt{3}$

$3(A_{sector} - A_{\triangle})$

$3\left(\frac{60}{360} 36\pi - 9\sqrt{3}\right)$

$\approx 9.8\ u^2$



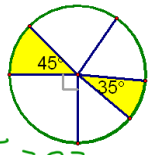

$\frac{6^2\sqrt{3}}{4}$

$\frac{36\sqrt{3}}{4}$

Probability = $\frac{\text{\# of successes}}{\text{\# of outcomes}}$ $\frac{\text{area shaded}}{\text{area whole}}$

ex 1

What is the probability that a point (in the circle)chosen at random lies in the shaded region?




d = 18 in

$P = \frac{\text{area shaded}}{\text{area whole}} = \frac{56.5}{(81\pi)} \approx .22$

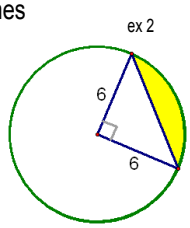
*Only sector =

$\frac{80}{360} = .22$

Probability = $\frac{\text{\# of successes}}{\text{\# of outcomes}}$

ex 2

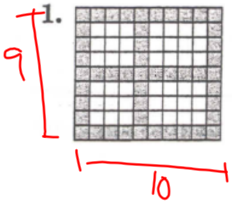
What is the probability that a point (in the circle)chosen at random lies in the shaded region?




$P = \frac{10.3}{(36\pi)} = .09$

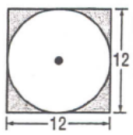
Worksheet examples.

1.



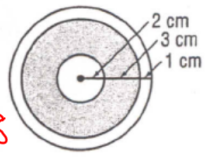

$P = \frac{48}{90} = .53$

3.




$P = \frac{(144 - 36\pi)}{144} = .21$

6.

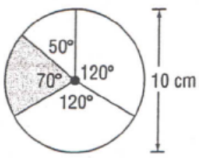



$P = \frac{A_{med} - A_{sm}}{(36\pi)} = \frac{(25\pi - 4\pi)}{(36\pi)} = .58$

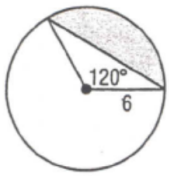
$21\pi / (36\pi)$

$\frac{70}{360} = .19$

1.




4.




HW
p625-626
7, 10-12, 16-19